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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/645,841

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Shuichi Kubota

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EXAMINER

KRAUSE, JUSTIN MITCHELL

ART UNIT

PAPER NUMBER

3682

DATE MAILED: 05/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/645,841	Applicant(s) KUBOTA ET AL.	
	Examiner Justin Krause	Art Unit 3682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 6,14,15,17,18,22,23 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,7-13,16,19-21,24-26 and 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/12/05, 11/25/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group 4, Figures 9-13 in the reply filed on April 14, 2006 is acknowledged.
2. Claims 6, 14, 15, 18, 22, 23, and 27 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on April 14, 2006.
3. Examiner further withdraws claim 17, which is drawn to flat sliding surfaces not present in the elected embodiment.

Information Disclosure Statement

4. In the IDS dated October 12, 2006, the publication number of the Mena reference is incorrect and should read 2002/0085778. The Examiner has cited the correct publication number to enter the reference into the file.

Claim Objections

5. Claims 5 and 24 are objected to because of the following informalities: the amendment to claim 5 fails to identify the claim from which claim 5 depends. Applicant as struck "any one of claims" as well as "to" but has not removed '1' or '4' from the claims rendering unclear the dependency. For the purpose of treating claim 5 on the merits, Examiner assumes claim 5 depends from claim 1. The same situation exists in

claim 24, given that claim 23 is withdrawn as part of a non-elected embodiment, examiner assumes claim 24 depends from claim 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-5, 7-13, 16, 19-21, 24-26 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "this side of another end face" as well as "this side of the one end face" and it is unclear what "this side" is.

Claim 3, "inner peripheral surface of said bearing body between positions each axially spaced apart a predetermined distance" is awkward and unclear what is intended.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented

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and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-5, 7-13, 16, 19-21, 25, 26 and 28 as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Mena (US 2002/0085778) in view of Morita et al (US Patent 4,513,990). For better clarity in the drawings, examiner is referencing US Patent 6,485,180 granted to Mena which corresponds to the above listed Patent Application Publication.

Mena discloses a sliding bearing comprising:

- a cylindrical bearing body (30)
- a plurality of sliding surfaces (34) provided on an inner peripheral surface and spaced apart from each other in a circumferential direction
- a first slit portion (40) extending in an axial direction from one end face to this side of another end face
- a second slit portion (48) extending in the axial direction from the other end face to this side of the one end face
- at least one groove (50) provided in the outer peripheral surface.

Mena does not disclose an elastic ring fitted into the groove portion in such a manner as to project from the outer peripheral surface of the bearing body to reduce a diameter of the bearing body.

Morita teaches elastic rings (26) to be press fit onto the end faces of the outer periphery of bearing member (20), and by being press fit, the elastic rings exert a

compressive force, reducing the diameter of the bearing body and serving as a stop member to maintain the positioning of the bearing. (col 3, line 39-45)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate an elastic ring as taught by Morita into the bearing of Mena. Mena teaches a bearing capable of expanding or compressing to fit into the opening in which it is inserted, the use of an elastic ring to compress the bearing prior to inserting it into the opening to serve as a positioning means for the bearing would have been obvious.

Regarding claims 2-4, the slit portions are plural in numbers (6 first slit portions and 6 second slit portions, Paragraphs 0019-0020), each of the sliding surfaces is provided on the inner peripheral surface between positions each axially spaced apart a predetermined distance from the end faces and are arranged at equal intervals.

Regarding claim 5, Morita discloses two grooves axially spaced apart and provided in the outer peripheral surface of the bearing body, and two elastic rings (26) provided in the groove portions, projecting from the outer peripheral surface of the bearing body.

Regarding claim 7, the sliding surfaces are provided on the inner peripheral surface of the bearing by extending beyond the groove portions in an axial direction.

Regarding claim 8, the elastic ring has a volume greater than a volumetric capacity of the groove portion, allowing it to project from the outer peripheral surface.

Regarding claims 9, 11 and 12, Mena discloses the bearing to be used in steering rack tube and the bushing is located on a rack shaft. Mena teaches of sprung protrusions which extend from the body of the bearing to serve the to create an interference fit with the tube. When combined with Morita, the elastic ring is fitted to an inner peripheral surface of the tube with interference as a functionally equivalent structure, and the bearing body is fitted at the sliding surface on an outer peripheral surface of the shaft. The environment of which the bearing is located does not alter the structure of the device in any way, and the bearing may be used in a steering column, steering rack, or any other shaft and tube arrangement where an expandable slide bearing may be needed.

Regarding claim 10, Mena discloses the general conditions of the bearing having a clearance width produced between the inner peripheral surface of the tube and outer peripheral surface of the bearing body by disclosing that the spring fingers (66) are flexible and contact the inner bore of the tube, one of ordinary skill in the art could have optimized the clearance width through routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)

Regarding claim 13, 16, 20 and 21, the sliding surfaces are arcuate concave surfaces, and the distance between bottoms of the sliding surfaces radially opposing each other is smaller than an inside diameter of the bearing body at each of the end faces thereof. A chamfered surface is present on either end. (see fig 5) The curvature of the arcuate concave surfaces is substantially equal to the curvature of the shaft.

Regarding claim 19, the compressive force exerted by the elastic ring would tighten the shaft with the resiliency of the elastic ring.

Regarding claims 25 and 26, all of the limitations are discussed in the rejections given above.

Regarding claim 28, The tube of Mena has a recessed portion (72) which engages the bearing body.

10. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mena in view of Morita et al as applied to claim 1 above, and further in view of Sakairi et al (US Patent 5,669,718).

Mena as modified by Morita discloses all of the claimed subject matter as described above but does not explicitly state the material is synthetic resin.

Sakairi teaches that synthetic resin is conventionally known within the art for forming slide bearings (Col 1, lines 6-7) for its low cost and excellent vibration absorbing characteristics (Col 1, lines 24-25).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the slide bearing of Mena and Morita from synthetic resin since it is conventionally known within the art to do so, for the purposes of low cost and excellent vibration absorbing characteristics.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Krause whose telephone number is 571-272-3012. The examiner can normally be reached on Monday - Friday, 7:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on 571-272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMK

5/5/06


Thomas R. Harmon
Primary Examiner